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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09 544,615	04 06 2000	KATSUYA SAITO	0145-148	9124

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EXAMINER

ROY, SIKHA

ART UNIT PAPER NUMBER

2879

DATE MAILED: 06/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/544,615

Applicant(s)

SAITO ET AL.

Examiner

Sikha Roy

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☐ Responsive to communication(s) filed on 31 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☐ Claim(s) \_\_\_\_\_ is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☐ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

### DETAILED ACTION

The Amendment, filed on March 31, 2003 has been entered and is acknowledged by the Examiner.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1 - 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over U. S. Patent 5,742,123 to Nagayama and in view of WO99/13493 to Torikai et al.

Regarding claim 1 Nagayama discloses (Fig. 16 column 21 lines 40-50, column 23 lines 30-67) a lamp bulb 301 comprising a seal of functionally gradient material having mixtures of electrically non-conductive material and conductive material in which a layer at one end is non-conductive and a layer at opposite end is conductive with intervening layers in which proportion of conductive material increases moving from one end to the other (Table 7) and a lead bar (electrode rod) 304 of tungsten passing through a hole extending through the functionally gradient material entering in one end 303<sub>1</sub> and out at the other end 303<sub>n</sub>.

Claim 1 differs from Nagayama in that Nagayama does not disclose silica glass as electrically nonconductive material, molybdenum as electrically conductive material used in the functionally gradient material of the seal and the proportion of the

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conductive material at the point of attachment of the lead bar to the functionally gradient material being no less than 6 vol.% and no more than 39 vol.%.

Torikai in analogous art of electricity introducing member for lamp vessels discloses (see the abstract and Fig. 3) that the seal with plurality of layers of functionally gradient material each comprising conductive material of molybdenum and non-conductive material of silica is such that at the point of attachment  $n(q+1)$  the ratio of silica in vol.% to the functionally gradient material is 80% or less and hence the proportion of the conductive material to the functionally gradient material at the point of attachment is 20 vol.% or more as claimed. Torikai further discloses this design of the seal eliminates the defect of crack formation in the functionally gradient material.

Therefore it would have been obvious to one of ordinary skill in the art at the time of invention to modify the seal with layers of the functionally gradient material of Nagayama by plurality of layers of functionally gradient material each comprising conductive material of molybdenum and non-conductive material of silica such that at the point of attachment the proportion of the conductive material to the functionally gradient material is 20 vol.% or more as taught by Torikai for eliminating the defect of crack formation in the functionally gradient material.

Regarding claim 2 Torikai discloses the electrode core is shrinkage-fitted from the surface on the non-conductive side (layer  $n_1$ ) up to the layer of point of attachment, the ratio of the diameter of the electrode  $d$  to the diameter of the seal  $D$  varying from .12 to .6. At the point of attachment the diameter of the hole  $C$  equals the diameter  $d$  of the lead rod and  $d/D = .6$ . Nagayama and Torikai disclose the claimed invention except for

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the limitation of the diameter of the hole C varying from  $1.2d$  to  $0.6D$ . It has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the condition  $1.2d \leq C \leq 0.6D$ , since optimization of workable ranges is considered within the skill of the art.

Regarding claim 3 Nagayama discloses (column 24 lines 5-10 Fig.16) that the hole 310 expands in a tapered form towards the non-conductive end, the tapered gap preventing layers of non-conductive and conductive materials from contacting the electrode rod, the thickness of the functionally gradient material increases progressively from the non-conductive (innermost layer) end towards the outermost layer at the point of attachment. The thickness of the functionally gradient material from the point of attachment to the non-conductive end is less than its thickness at the point of attachment.

Referring to claim 4 it is clearly evident from Fig. 16 the outside diameter of the functionally gradient material at the non-conductive end ( $303_1$ ) is smaller than that of the layer at the point of attachment ( $303_n$ ).

### ***Response to Arguments***

Applicant's arguments with respect to claim 1 have been considered but are moot in view of the new ground(s) of rejection.

In response to applicants' argument that Nagayama teaches the thickness of the functionally gradient material from the point of attachment to non-conductive end is greater than the thickness of the functionally gradient material at the point of attachment the Examiner respectfully disagrees. The thickness of the layers as shown by Nagayama is increasing from non-conductive end to the conductive end but the claim limitation recites the thickness of the material increasing from non-conductive end to the point of attachment and Nagayama teaches the same.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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**Contact Information**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sikha Roy whose telephone number is (703) 308-2826. The examiner can normally be reached on Monday-Friday 8:00 a.m. – 4:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nimeshkumar D. Patel can be reached on (703) 305-4794. The fax phone number for the organization is (703) 308-7382.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0956.

S.R.  
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